United States Patent [19]

Czapor

[11] **3,860,013**

[45] **Jan. 14, 1975**

[54] **DENTAL STRIP**

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[22] Filed: **July 17, 1972**

[21] Appl. No.: **272,465**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 159,661, July 6, 1971, abandoned.

[52] **U.S. Cl.** **132/91,** 132/93

[51] **Int. Cl.** **A61c 15/00**

[58] **Field of Search** ..... 132/91, 92 A, 92 R, 93

[56] **References Cited**

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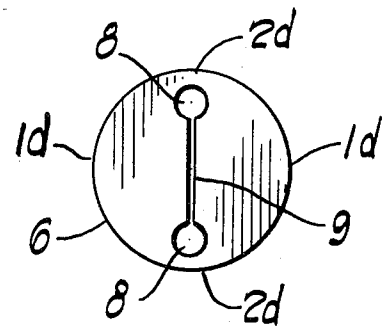
Primary Examiner—Robert Peshock

[57] **ABSTRACT**

A dental strip of a rubber like material having handle means and a thin stretchable section therebetween for introduction between the teeth for cleaning thereof.

4 Claims, 13 Drawing Figures



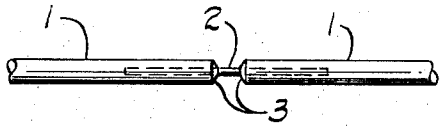


Fig. 1

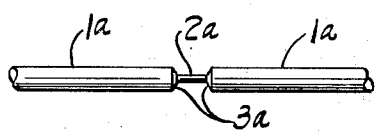


Fig. 2

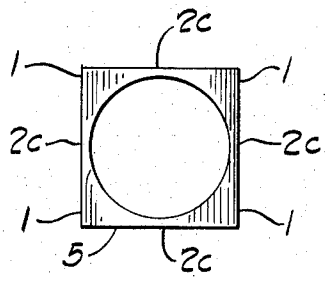


Fig. 5

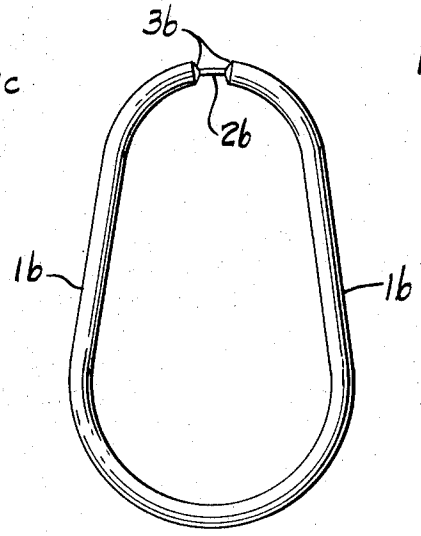


Fig. 3

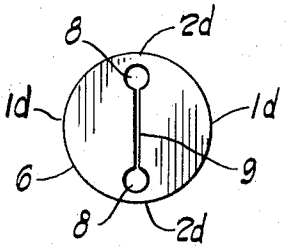


Fig. 6

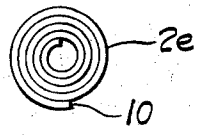


Fig. 7

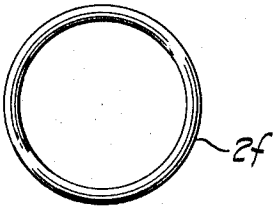


Fig. 8

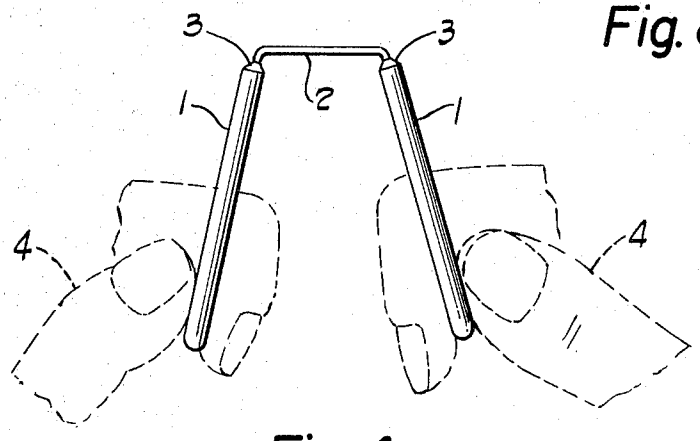


Fig. 4

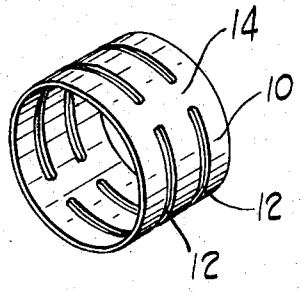


Fig. 9

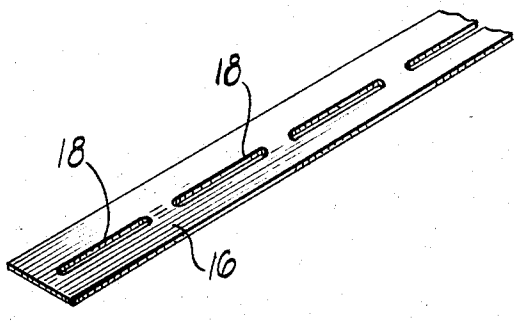


Fig. 10

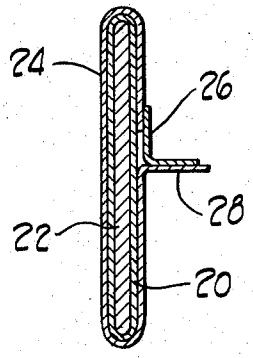


Fig. 11

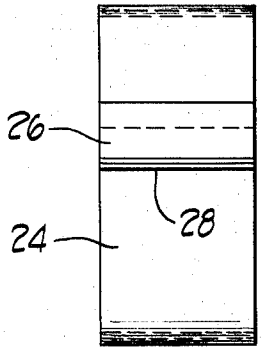


Fig. 12

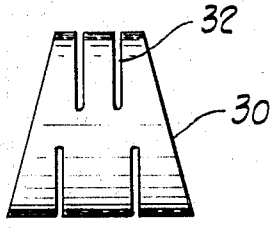


Fig. 13

DENTAL STRIP

This application is a continuation-in-part of my application Ser. No. 159,661, filed July 6, 1971 and now abandoned, for Dental Strip.

This invention relates to dental cleaning and more particularly to dental floss, which is used to clean particles of food from between the teeth.

It is an object of this invention to provide a rubber-like material in an elongated form which will compress when stretched to reduce in diameter thus providing a thin, compressable material which needs no lubrication to clean between closely spaced teeth and said material being provided with handles to render the cleaning less difficult.

Another object of the invention is to provide a form of dental floss which is rolled up from a sheet of elastic material into a string-like form to prevent whiplash if the elastic material should break.

The prior art includes dental floss which is made of a fiber coated with a wax lubricant which compresses only slightly upon use which makes the cleaning between closely spaced teeth very difficult and generally results in the floss breaking.

Accordingly, it is another important object of this invention to provide a dental cleaning strip tubular in form and of a rubber-like material with slits on opposite sides of the tube.

Another object of this invention is to eliminate the objectionable features in the prior art referred to above while providing a form of dental cleaner which can be used over a number of times and thereby effect an economy.

Other objects and advantages more or less ancillary to the foregoing and the manner in which all the various objects are realized, will appear in the following description, which considered in connection with the accompanying drawings, set forth the preferred embodiment of the invention.

In the drawings:

FIG. 1 is a plan view of the stretchable dental cleaner wherein the elastic strip portion is molded into plastic with alike handles;

FIG. 2 is a plan view of a dental cleaner with handles molded in the similar material;

FIG. 3 is a plan view showing the dental cleaner of FIGS. 1 and 2 in an oval shape;

FIG. 4 shows the dental cleaner in operating position;

FIG. 5 is a plan view of the device in a modified form when the dental cleaner is made of a flat, thin, square sheet of elastic material;

FIG. 6 is a plan view of dental cleaner wherein the device is in circular form;

FIG. 7 is an end view of the dental cleaner wherein the material is rolled up from a thin sheet of elastic material and;

FIG. 8 is a plan view of the device as illustrated in FIG. 7 wherein the rolled up material forms a circular ring;

FIG. 9 is an isometric view of an alternate form of my invention;

FIG. 10 is an isometric view of a continuous strip;

FIG. 11 is a side view of a package arrangement;

FIG. 12 is a front view of the package shown in FIG. 11 and;

FIG. 13 is a front view showing a modification of the tubular form of strip.

Referring first in detail to FIG. 1 of the drawings a dental strip is shown therein which has two laterally extending handles 1, which may be of a plastic or the like material preferrably circular in cross section. The handles 1 are united by strip 2 formed from a thin sheet of elastic material rolled up in a cylindrical form and secured to handles 1 by us of an adhesive or thermal setting materials. The strip 2 is in a string-like form and has particular utility when made of high-grade rubber. Handles 1 are formed with tapered ends 3 that merge into the strip 2 which forms a resilient shoulder to clean the side portions of the teeth or for use in massaging the gums. The handles 1 are preferrably made of a flexible, but relatively unyielding, material since it is intended that the stretch occur in the strip 2 the stretching resulting in a reduction in the diameter of the strip 2 for introduction into closely spaced teeth.

FIGS. 2 and 3 illustrate a design similar to the one shown in FIG. 1 except that in FIG. 2 the entire assembly is molded from a single material preferrably rubber, thus providing a unitary and integral strip 2*a* joined to handles 1*a* and having the aforementioned shoulders 3*a* as a transition from the strip 2*a* to the handles 1*a*. In FIG. 3, a single handle 1*b* is illustrated with a strip 2*b* between the ends of the handle 1*b* and strip 2*b* being molded out of a unitary material and thus integral with the strip 2*b* and the shoulders 3*b*.

Referring to FIG. 4, the dental strip of FIG. 1 is shown in operating position in the user's hands. Fingers 4 are illustrated by the dotted lines and are shown in gripping relation with the handle 1. In the position shown in FIG. 4, the handles are held downwardly and forced apart at the ends connected to the strip 2 thus producing tension and stretching in strip 2. In this position strip 2 is forced into spaces between the teeth and lateral motion results in cleaning out particles of food from the spaces therebetween. It is understood that strip 2 being made of elastic material will reduce in diameter when stretched and will further compress when worked into narrow spaces into the teeth. In the event that the strips 2 should wear and break the short length thereof causes the broken ends to backlash against the handles 1 and thereby prevent injury to the mouth.

In FIG. 5 an alternate form of my invention is shown wherein a flat wheet of elastic material, preferrably of high-grade rubber, is shown with a circular opening 7 formed therein the outer wall 5 being square. By arranging the diameter of the opening 7 to be slightly smaller than the width of the square 5, the sections 2*c* where the circle 7 is proximately tangential to the sides of the square 5, form a strip 2*c* for use as the cleaning element. It can also be seen that the opening 7 may be positioned off center in relation to square 5 thus providing strips 2*c* of varying thicknesses giving a choice to the user as to the thickness of the cleaning strip desired. The corners of the square 5 are available for gripping, thus providing gripping handles 1.

In connection with the embodiment shown in FIG. 6 it can be seen that the configuration is in the form of a circular, flat sheet 6. A pair of diametrically spaced holes 8 are positioned with the outermost circumference of the small holes 8 spaced from the outermost circumference of flat sheet 6. This results in a cleaning strip 2*d* at the nearest portions between the circumference of holes 8 to the outer circumference of the sheet 6. To further facilitate the use thereof holes 8 are joined together by a slit 9 resulting in semi-circular

halves which provide handles 1*d* for gripping during use of the cleaning strips 2*d* which are found at the terminal of the outer arcuate margins of the semi-circular handles 1*d*.

The rolled up elastic material in a string-like form is best illustrated in sectional form in FIG. 7. This is obtained by rolling a sheet of thin, elastic material to obtain the string-like form 2*e*, the end 10 being secured to the roll 2*e* by thermal setting or adhesive materials.

In FIG. 8 the rolled up body illustrated in FIG. 7 in tube form is in a ring 2*f* usable as a continuous cleaning strip. The material being rolled in the cylindrical, string-like form will prevent injury in the mouth resulting from breaking and snapping when the device is worked between the teeth as the layers of the section 2*e* are worn or cut, the strip 2*e* becomes tensionless and very thin in diameter, which in time becomes useless and must be replaced but in no event does the material break suddenly while under extreme tension to result in backlash and injury to the gums or the mouth.

An alternate form of my invention is shown in FIG. 9 wherein the dental strip is fabricated from a tubular section by slitting and cutting individual sections therefrom. The tube 10 is provided with circumferentially disposed slits 12 with an uncut area 14 between the ends of said slits. The slitted section becomes the operative dental strip as illustrated by the numeral 2 in the abovementioned configurations and the section 14 becomes the portion to be gripped and utilized as handles as previously designated by the numeral 1 in the other modifications shown.

In FIG. 10 the strip is shown as in tape form 16 with longitudinal slits 18 formed therein to produce repeating sections of extendable operative portions of the strip 16 thus achieving a section which functions to pass between the teeth to remove food lodged therebetween while achieving a section which if one side or the other should break the other remaining side stays intact, thus preventing whiplash of the breaking, elastic material.

In FIG. 11 the dental strip shown in FIG. 9 is illustrated in a package wherein a strip 20 is mounted on a cardboard liner 22 to hold the strip 20 in a generally flat shape. A paper outer wrapper 24 is positioned over the outer surface of the dental strip 20 to provide a sanitary covering therefore. A tape 26 having pressure sensitive adhesive thereon engages the wrapper 24 to close the same with one edge of the tape 26 adhering to an angularly disposed leg 28 on the wrapper which functions as a tab to pull for opening the package and removing the wrapper 24 thus exposing the tape 20 for use.

In the embodiment disclosed in FIG. 13 the shape of the cylindrical band is modified by having the actual width thereof wider at one side than it is at the diametrically opposed side. The strip 30 is provided with the slits 32 and is generally tubular in cross section as best illustrated in FIG. 9, however, the varying length of the tube provides for a convenience in use since the thickness of the available strip is larger in one instance than the other and thus gives the user a choice for the required cleaning effect.

Having thus described this invention in such full, clear and concise and exact terms as to enable any person skilled in the art to which it pertains to make and use the same, and having set forth the best mode contemplated of carrying out this invention, I state that the subject which I regard as being my invention is particularly pointed out and distinctly claimed in what is claimed, it being understood that equivalents or modifications of, substitutions for, part of the above specifically described embodiments of the invention may be made without departing from the scope of the invention as set forth in what is claimed.

I claim:

1. A dental strip comprising a cleaning section of flexible and stretchable elastic material, and handle means integral with said section for gripping by the user while introducing said section between the teeth for cleaning thereof, said handle means being a semi-circular sheet like body of the elastic material, each end of the arcuate margin of the semi-circular portion being joined to the adjacent arcuate margin to form a cleaning section in that area.

2. A dental strip comprising a cleaning section of flexible and stretchable elastic material, and handle means integral with said section for gripping by the user while introducing said section between the teeth for cleaning thereof, the said handle means being formed by the material lying between an outer square section and an inner circular wall, said circular wall being proximately tangential to the sides of the square thus providing corners to be used as handles in operating the cleaning sections lying between the square sides and circular wall in the cleaning operation of the teeth.

3. A dental strip comprising a cleaning section of flexible and stretchable elastic material, and handle means integral with said section for gripping by the user while introducing said section between the teeth for cleaning thereof, said handle means comprising diametrically opposed portions of a tube with circumferential side by side slits formed in said tubular section between said handle portions.

4. A dental strip comprising a cleaning section of flexible and stretchable elastic material, and handle means integral with said section for gripping by the user while introducing said section between the teeth for cleaning thereof, said handle means comprising handle sections spaced apart on an elongated strip and longitudinal slits formed in the strip between the handle section to provide readily stretchable cleaning sections between said handle portions.

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